

## FOREST EXPERIMENT STATIONS IN CALIFORNIA

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FEBRUARY 24, 1925.—Committed to the Committee of the Whole House on the state of the Union and ordered to be printed

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Mr. HAUGEN, from the Committee on Agriculture, submitted the following

### REPORT

[To accompany S. 4156]

The Committee on Agriculture, to whom was referred the bill (S. 4156) to authorize the establishment and maintenance of a forest experiment station in California and the surrounding States, having considered the same, report thereon with a recommendation that it do pass.

The bill reported herewith is identical to H. R. 11891, by Mr. Lineberger. The purpose of the bill is to authorize the establishment of a forest experiment station in California and the surrounding States.

A forest experiment station for California is a part of the general plan which the department has worked out for the establishment of a regional station of this character in each of the principal forest regions of the country. Such stations have already been established in the Northeast, the Lake States, the Southern Appalachians, the South, the Northern Rocky Mountains, and the Pacific Northwest, and a small amount of work is under way in other parts of the West.

California and adjacent States form a forest region distinct from the Rocky Mountain region and from the Washington-Oregon region.

A station is needed in this region because the opportunities for using the kind of knowledge that such a station is fitted to obtain are unusually favorable. In the redwood, the sugar pine, and the western yellow pine this region has three of the finest timber trees in the world. Redwood often attains a diameter of  $2\frac{1}{2}$  feet in 50 years, and will probably grow at the rate of 2,000 board feet per acre per year. Sugar pine and western yellow pine commonly reach diameters of over 2 feet and heights of 110 feet in 60 years, and will probably produce 1,000 board feet per acre per year.

There are still 11,500,000 acres of old-growth forest in California, and it is only a matter of proper methods of logging and protection to assure replacing these old forests with young ones. Only about 5,000,000 acres have been cut over. We thus still have an opportunity to halt destructive lumbering before it is too late.

The problem of forest preservation is most acute in the 5,000,000 acres of privately owned forests. The cutting of timber in these forests is tending toward the same devastation that has been practiced elsewhere, as is shown by the two-thirds million acres of cut-over nonproducing private forest land already accumulated through destructive logging, and by the fact that at present not less than 40 to 50 per cent of the private forests logged each year are left worthless to the owner, the State, and the Nation. The rate of cutting is increasing rapidly, so that the opportunity to keep these forests productive is one that must be seized with no undue delay.

Forest destruction is not of necessity a corollary of lumbering. One of its chief causes is lack of knowledge. An experiment station would systematically work out and furnish the knowledge needed for practical timber growing. Before embarking on timber growing the landowner needs to know with some degree of accuracy how fast his timber will grow, so that he can determine how much forest land is necessary to supply his manufacturing plant. He needs to know how to change his logging methods so as to assure cheap natural reproduction. The pine forests of California are distinguished by the abundance and vigor of the young growth that has sprung up under the old forests. How to save this growth from destruction by logging and how to manage it after the old timber is cut is a promising field for research. In the redwood forests, natural reproduction by sprouting must be supplemented by planting, and there are many problems of selecting species, growing nursery stock, and planting that must be worked out. In the pine forests also planting will be used to supplement natural reproduction and to plant up denuded areas, and here the planting problem is made difficult by the complex topography, climate, and soils of the Sierra Mountains. There will be an increasing need of studying the methods of thinning young forests, both of redwood and of pine, and of the best ways to protect them against fire and other enemies.

Although the struggle for forest preservation against forest destruction arises, of course, chiefly on private lands, there are many problems demanding research in the 10,000,000 acres of timber in the national forests of California. The problem in these forests is not so much to prevent forest destruction as to learn how to grow a thousand feet of timber on an acre each year instead of the three or four hundred we can now produce. In our big timber sales in these forests, for example, we are confronted with the need of assuring complete and rapid natural restocking; yet this is a problem that varies with changes of topography, slope, altitude, and soil. For intensive timber growing the different methods required for all these variations must be worked out. Likewise for intensive handling of these forests, we shall need to know how and when to thin growing forests; the comparative growth rates and yields; species best adapted to different soils and altitudes; the peculiar requirements of different species for light, moisture, and soils.

In protection against fire the California forests, both public and private, are confronted with a difficult task, as is shown by the terrific destruction by forest fires during the past summer. In spite of nearly a quarter of a century of effort and organization to combat fires, over 500,000 acres were burned over in California last summer, with an estimated damage of certainly not less than \$5,000,000. It is obvious that a renewed and more fundamental attack on this problem by a strong research agency is necessary. There is needed first a complete statistical analysis of forest fires for the last 15 years, so that we may learn everything to be learned from past experience; we need a comprehensive study of weather conditions responsible for fire catastrophes; of the methods of organization employed in fire protection, the behavior of fires in different kinds of forests, and the best methods of fire fighting to employ. The advantages of improved methods of forest-fire detection and fire fighting are obvious. If we can, in addition, learn to predict dangerous fire conditions, either from weather conditions or by measuring the inflammability of the forest itself at any given time, we shall be able to prepare for emergencies far better than we now can.

The forest problems of the California region are not confined merely to keeping forests productive. There are two and one-half million acres of nonproducing forest lands denuded by logging or by fire that must be restored to timber production. This restoration is partly a matter of planting denuded land and partly of protecting from fire during a long period of natural restocking with timber trees the brush fields that have taken the place of pine forests destroyed by repeated fires.

In addition, the California region has another forest problem of unusual importance—mountain erosion in relation to valley agriculture. In southern California the relations between brush or chaparral cover, water supply, and erosion are very close, and this cover is managed less for its own sake than for its water-conserving powers. We know these forests prevent the rapid run-off of water and thus conserve this water for underground storage and ultimate use for irrigating the extremely valuable farm lands in the valleys.

Of equal importance is the influence of the brush forests in reducing erosion. Heavy storms are known to wash enormous masses of soil and rocks from mountain sides that have been denuded of cover and to carry them down the streams to cut away or bury the fertile farm lands and orchards in the valleys. Brush or forest cover holds back water and soil and greatly reduces erosion. Our knowledge, however, of these intricate relations must be greatly increased before these millions of acres of protection forest can be handled so as to aid the dependent agriculture to the fullest extent.

Among the chief problems, in addition to a better knowledge of the relation of forest cover to stream flow and erosion, are better methods of protecting the brush cover from the ravages of fire, methods of rapidly restoring the cover when it is destroyed, extending the brush cover to adjacent lands lacking it, and developing artificial means such as check dams for reducing erosion.

It is not merely to make use of idle land or to protect valley farms that this region needs to keep its forests growing. The need for the timber itself is sufficient motive. The lumber consumption of California, which reached five and three-fourths billion board-feet in

1923, already far exceeds the annual lumber cut of two and one-fourth billion board-feet and is increasing faster than the cut. With a rapidly growing population, agriculture, and industry, this region is certain to need all the wood that can be produced on its forest lands.

Every State that has unusually productive forest soils should grow as much timber as it can either to help out less fortunate regions or at least to be self-supporting and so reduce the forest drain elsewhere. Consequently the California forests are not merely of local interest but have a national significance, particularly during the period the East is getting a timber-growing program under way.

If a Federal forest experiment station is provided for California, it will be possible to enter into advantageous relations with the University of California and with its southern branch, thus bringing to forest research the facilities of this great institution.

There is printed as follows a letter from the Secretary of Agriculture on the proposed legislation, expressing his approval and advising that it is not in conflict with the financial program of the President:

DEPARTMENT OF AGRICULTURE,  
Washington, February 13, 1925.

Hon. G. N. HAUGEN,  
*Chairman Committee on Agriculture,  
House of Representatives.*

DEAR MR. HAUGEN: I have your request of February 4, for a report on Mr. Lineberger's bill (H. R. 11891) to authorize the establishment and maintenance of a forest experiment station in California and the surrounding States.

The plan proposed for the establishment of this station fits in with the department's program of regional forest experiment stations outlined in the inclosed department Circular 183. I believe the proposal to establish such a station in California is sound, and recommend that provision for the same be made as soon as the financial conditions permit. I am inclosing for the information of the committee a statement submitted by the Chief Forester which explains in detail the need for the station and the work it would do if established.

Reports similar to the foregoing, made by the department to the Senate Committee on Agriculture and Forestry, on Senate bills 4099 and 4156, were submitted to the Budget Bureau, pursuant to Circular 49 of that bureau, and returned to the Department of Agriculture with the advice that the reports were not in conflict with the financial program of the President.

If further information is desired for the use of your committee, please let me know.

Sincerely yours,

HOWARD M. GORE, *Secretary.*

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